

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
3 June 2004 (03.06.2004)

PCT

(10) International Publication Number
WO 2004/047159 A1

(51) International Patent Classification⁷: **H01L 21/28**,
21/3205, 29/786, 27/00, G02F 1/136, 1/1345, C22F 1/08,
C22C 9/10

Mangpo-dong, Paldal-gu, Suwon-si, Gyeonggi-do 442-706
(KR).

(21) International Application Number:
PCT/KR2003/002270

(74) Agent: **PARK, Young-Woo**; 5F, Seil Building, #727-13,
Yoksam-dong, Gangnam-gu, Seoul 135-921 (KR).

(22) International Filing Date: 27 October 2003 (27.10.2003)

(25) Filing Language: English

(26) Publication Language: English

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE,
GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC,
SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(30) Priority Data:
10-2002-0072001
19 November 2002 (19.11.2002) KR

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (*for all designated States except US*): **SAM-
SUNG ELECTRONICS CO., LTD.** [KR/KR]; 416, Mae-
tan-dong, Yeongtong-gu, Suwon-si, Gyeonggi-do 442-742
(KR).

(72) Inventors; and

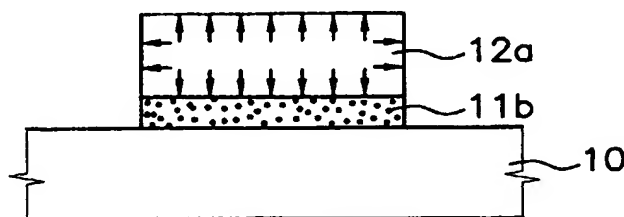
(75) Inventors/Applicants (*for US only*): **CHO, Beom-Seok**
[KR/KR]; 101-2402 Kolon Apt., #607-1 Daerim 3-dong,
Yeongdeungpo-gu, Seoul 150-811 (KR). **JEONG,**
Chang-Oh [KR/KR]; 201-203 Dongsuwon LG village,

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: TFT SUBSTRATE FOR LIQUID CRYSTAL DISPLAY APPARATUS AND METHOD OF MANUFACTURING THE SAME



(57) Abstract: There are provided a TFT substrate for an LCD apparatus and a method of manufacturing the same. A substrate (10), a diffusion barrier layer (11) and a copper alloy layer (12) are formed on the TFT substrate, consecutively. The copper alloy includes a material from about 0.5at% to about 15at% to form a gate wiring layer. The material is used to form the diffusion barrier layer (11). A compound that comprises a material such as Zr, Ti, Hf, V, Ta, Ni, Cr, Nb, Co, Mn, Mo, W, Rh, Pd, Pt, etc. is deposited on the diffusion barrier layer (11) to a thickness from about 50Å to about

5,000Å. The deposited compound is then heat treated to convert the deposited compound into a silicide compound (11b). The transistor substrate has low resistance and high conductance. Also, etching process is simplified, and a mutual diffusion is prevented by means of the thin diffusion barrier layer.

WO 2004/047159 A1